

THE IDENTITY OF AMELANCHIER FLORIDA LINDLEY

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In connection with a current study of the genus *Amelanchier* in Minnesota, the question of the identity of *A. florida* Lindley has arisen. The exact status of this species and the probability of its occurrence in the middle western states has been a vexing problem for some time. This has led to a study of the type specimen and of Lindley's (2) original description and plate; also to a critical examination of herbarium specimens from the region of the type collection. The material upon which *Amelanchier florida* is based was collected by David Douglas in "north-west America" in 1826. The type specimen of this species is now deposited in the Herbarium of the Botany School, Cambridge, England. The following remarks concerning the type are from A. C. Seward's letter to the writer:

"There are two specimens on the sheet: a smaller one, against which is written 'N.W. Am. Douglas.' Below the larger is added 'Am. Florida' with a reference to the *Botanical Register* 1833, where it is figured and is said to be found by Douglas. In the left-hand bottom corner of the sheet is written 'N.W. America Douglas 1826.' . . . The writing is Lindley's, though I am not by any means sure that the words written against the smaller specimen which I quoted are in his handwriting. The specimens are described on a more recent label as the type of *Amelanchier florida* Lindley, *Botanical Register* 1833, Pl. 1589."

In 1833 Lindley (2) described the species as follows:

"*A. florida*; foliis oblongis utrinque obtusis versus apicem grossè serratis semper nudis, bracteis stipulisque apice plumosis deciduis, racemis strictis multifloris, staminibus calyce extùs glabro brevioribus.

"Frutex erectus, glaber, ramis viridibus v. fusco-iridescentibus. Folia oblonga, basi utrinque obtusa, nunquam pubescentia nisi aliquando sub vernatione, versus apicem grosse serrata. Stipulae brunneae, marcidiae, lineares, intus ad apicem villis longis plumosae; citissime deciduae. Racemi terminales, cylindracei, multiflori, glaberrimi, stricti; bracteis linearibus, acutis, apice villosis, citissime deciduis. Calyx extùs glaber, intus pubescens; dentibus acuminatis, staminibus longioribus v. aequalibus. Petala lineari-spatulata. Stamina erecta, brevissima.

"A native of North-west America, where it was found by Mr. Douglas. It forms a handsome hardy shrub, in the way of the Snowy Mespilus, flowering in May. Like that species, it is best propagated by layers.

"It is at once recognised by the shortness of the stamens; otherwise it is very near *A. sanguinea*, already figured at fol. 1171 of the present work. But that species has moreover smaller and more capitate flowers, the teeth of the leaves are finer, the bracteae and the stipulae much more pubescent, and the calyx far more downy inside.

"The petals vary in length; in one of our wild specimens from Mr. Douglas they are more than $\frac{3}{4}$ ths of an inch long."

Through the courtesy of the Botany School Herbarium, it was possible for Miss Sarah Dyal, Cornell University, to examine for me the type specimen and note certain critical features. These can best be described in Miss Dyal's own words (in lit.):

"Type of *Amelanchier florida* Lindley 1833 collected by Douglas 1826 in NW America. (Under *Aronia*). Leaves glabrous; twigs dark reddish-brown; inflorescence (a) length 5-7.5 cm., (b) glabrous, (c) lower pedicel 8-10 mm. to base of ovary, (d) ovary summit woolly, (e) width of hypanthium 4-4.5 mm., (f) length of sepals 3-4 mm. (2-3 times as long as wide) woolly above, both extended and recurved, (g) length of petals 8-11 mm. . . ."

From Lindley's description and Miss Dyal's observation there seems little doubt that *Amelanchier florida* is an entirely different entity from any of the several densely pubescent forms of the Great Plains region which have been referred to that species in the past, one of which is unquestionably *A. alnifolia* Nuttall (3) often cited as a synonym of *A. florida*.

With this concept in mind an examination has been made of a number of herbarium specimens from the general region of the type which were kindly placed at the writer's disposal by Professor M. E. Peck of Willamette University, Oregon, and Dr. T. C. Frye of the University of Washington. It has been found that *A. florida* is a well defined species occurring typically on the west side of the Cascade Range in Washington and Oregon. All of the typical specimens examined have a sparse evanescent pubescence. This is particularly true of plants that have not yet come into full anthesis while in the fruiting condition they are either glabrous or with a few hairs along the midrib near the leaf base. This agrees with Lindley's description since the statement "semper nudis" of the first paragraph is qualified in the next by "nunquam pubescentia nisi aliquando sub vernatione." From the study it has been possible to formulate the following more complete description.

AMELANCHIER FLORIDA Lindley

Leaves oblong (seldom oblong-elliptic), obtuse at both ends, fully expanded at anthesis; sparsely pubescent when young, the pubescence quickly evanescent, early glabrate or with a few hairs persisting on the petiole and lower midrib; blades about 4 cm. long, 2.5 cm. wide at flowering time, about 5.5 cm. long, 3 cm. wide at maturity, coarsely serrate toward the apex with acute sinuses, lateral veins 10-12 (9-13) on each side ascending and running into the serrations; petioles slender, often 1-1.5 cm. long at flowering time, 1-2.5 cm. long when fully mature; inflores-



Miss Drane del. Pub. by J. Ridgway 159 Recadilly June 1, 1833.

J. Wats. n.

PLATE VI. AMELANCHIER FLORIDA Lindley. An exact outline drawing of Lindley's original figure prepared as recommended by Buchholz (1).

cence 3–7.5 cm. long, erect, at first sparingly pubescent but soon glabrate; lowermost pedicel 8–11 (14) mm. long; sepals 3–4 mm. long (2–3 times as long as wide), very acute, woolly above in flower, somewhat reflexed and glabrate in fruit; petals 8–13 (16) mm. long, linear-spatulate to oblanceolate; stamens shorter than the calyx lobes; ovary summit woolly at anthesis, sometimes nearly glabrate in fruit; hypanthium 4–4.5 mm. in diameter, shallowly cup-shaped, only slightly constricted in fruit; fruit globose.

A slender shrub about 15 feet high, of the forest, and more often the forest margin, on the west slope of the Cascade Range in Washington and Oregon.

Wiegand (4) in his first paper on the genus *Amelanchier* in eastern North America reported *A. florida* from Isle Royale and Keewenaw Point, Michigan. He (5) later became doubtful as to the occurrence of this species in the Great Lakes region as indicated in his second paper (5) dealing with this genus. In discussing *A. huronensis* he states "this species together with *A. humilis* probably forms the basis of records of *A. florida* Lindley from the region of the Great Lakes." Since a number of western species of plants actually do occur about Lake Superior, a careful study of the Isle Royale material, including some of the specimens cited by Wiegand, was made to determine whether *Amelanchier florida* has a similar distribution. A comparison of the Isle Royale material with specimens of typical *A. florida* shows the following differences: in *Amelanchier florida* the leaves are oblong, coarsely serrate toward the apex, the sepals 3–4 mm. long, 2–3 times as long as wide, very acute, the hypanthium shallowly cup-shaped. In the Isle Royale material the leaves are broadly oval to oblong-oval, usually serrate-dentate to the middle, the sepals 1.5–2.5 mm. long, about as long as wide, broadly acute, the hypanthium saucer-shaped. Other reports of *A. florida* from the region of the Great Lakes should be discounted because they apparently are based upon the earlier interpretation of Wiegand (4).

Amelanchier florida Lindley appears, therefore, to be a species of the west slope of the Cascade Range in Oregon and Washington. It should not be confused with forms of the Great Lakes or the Great Plains regions. The following specimens, which have been examined, may be considered as fairly typical. The letters (UW), University of Washington, and (W), Willamette University, indicate the herbaria where these specimens are deposited.

WASHINGTON. King County: Seattle, *E. S. Meassy* (UW). Pierce County: sandy soil, Reflection Lakes, Mt. Rainier, July 31, 1932, *F. A. Warren 1786* (UW); rocky soil, Gobbler's Knob, Mt. Rainier, July 17, 1932, *F. A. Warren 1604* (UW). Whidby Island: rocky shore, Cranberry Lake, June 2, 1934, *G. N. Jones 4897* (UW) (typical except for the sepals). OREGON. Lane County: Horse Pasture Mt., 10 miles south of McKenzie Bridge,

alt. 5000 ft., July 1, 1934, *M. E. Peck 2593* (W); bank of Frog Lake, July 27, 1927, *M. E. Peck 15910* (W).

I wish to express my thanks to Dr. C. O. Rosendahl and Dr. F. K. Butters of the University of Minnesota for their counsel and suggestions given during the course of this investigation.

College of Agriculture, University of Arkansas,
Fayetteville, Arkansas,
March 11, 1936.

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OBSERVATIONS ON THE WESTERN JUNIPER

WALDO S. GLOCK

A brief study of the western juniper (*Juniperus occidentalis* Hook.) in the high Sierra Nevada of Alpine and Tuolumne counties, California, has yielded some interesting information and has raised some important problems. The species was observed and core samples taken in Faith and Charity valleys southeast of Lake Tahoe, in the vicinity of Kit Carson Pass, and in the Sonora Pass and Dardanelles region. The writer's attention was directed to the juniper by Mr. Clarence K. Bennett and Dr. Ralph W. Chaney. Especial gratitude is due Mr. Bennett whose financial aid helped to make the field work possible.

Specific localities inhabited by the junipers are quite distinctive. These trees occupy relatively dry sunny slopes with westerly or southerly exposure. However, scattered trees were seen on a precipitous easterly slope whose individual jutting ledges of nearly bare granite provided sites which have approximately the same exposure time to the sun as have the westerly slopes. The junipers are most frequently found on gravel moraines, on slopes of coarsely weathered lava, or on bare granite ridges where their roots insinuate themselves with difficulty among the huge boulders and into crevices. Such habitats, rather than rich humus or moist meadow borders, are preferred.

In Faith Valley at an elevation just below 8000 feet, the trees grow upon a weathered lava slope and also upon the side of a gravel ridge. At Chipmunk Flat along Deadman Creek at an elevation of 8000 feet, they grow on a coarse boulder terrace fifteen to twenty-five feet above stream level. The north wall of Deadman Canyon, above Chipmunk Flat, rises to a bare granite shoulder and ridge at about 9000 feet. Here, scattered junipers,